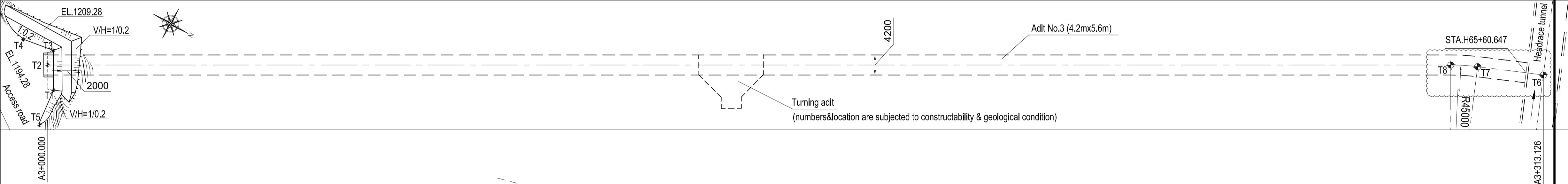
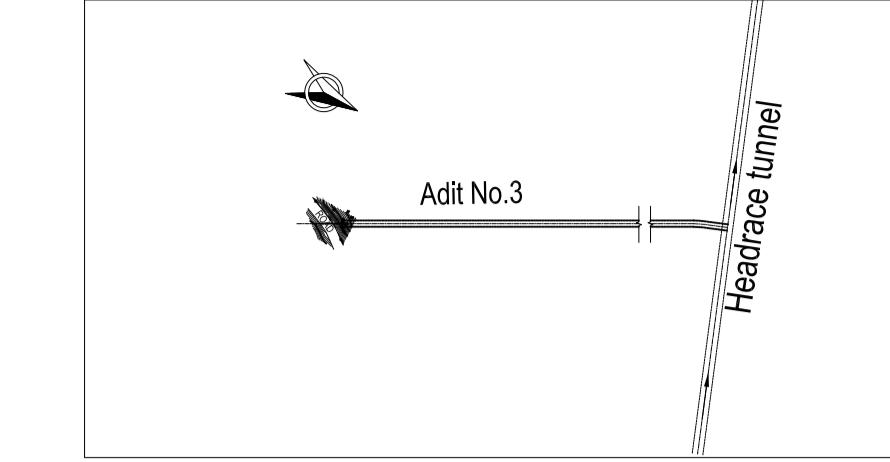


## GENERAL PLAN LAYOUT OF ADIT NO.3

SCALE: 1:500



KEY PLAN

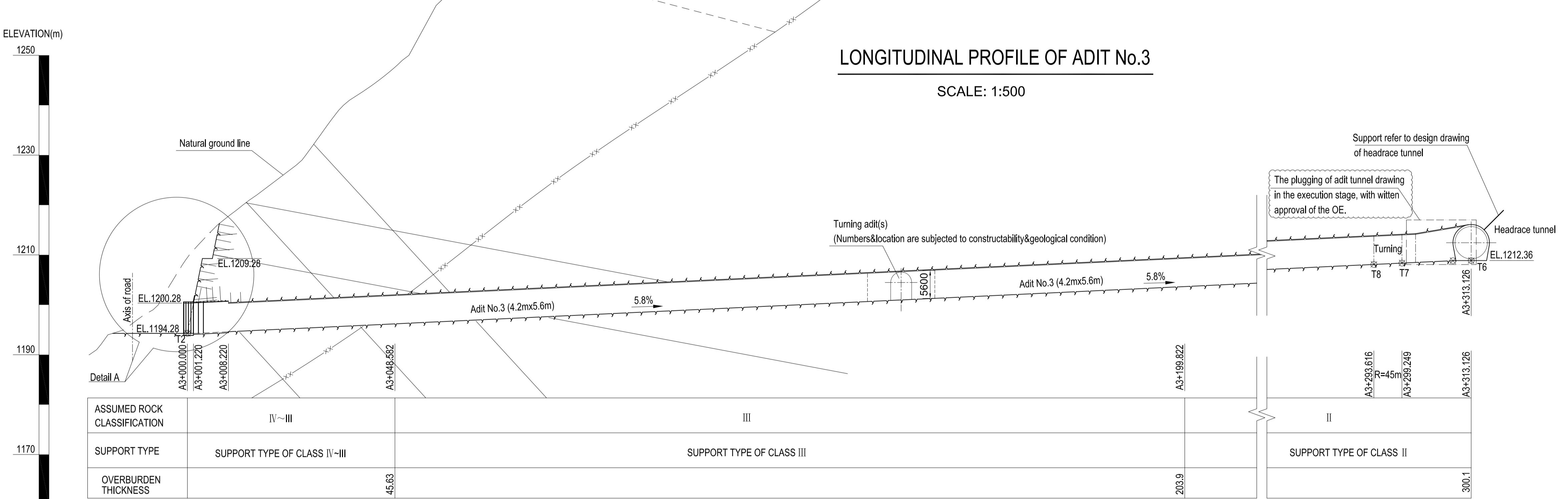


NOTE

- This set of drawings are excavation and initial support of No.3 adit.
- The coordinates, chainages & elevations are measured in meters, all dimensions are in millimeters unless otherwise stated.
- These rock classes and length estimates in drawings are purely speculative, and all rock classes may be encountered.

## LONGITUDINAL PROFILE OF ADIT No.3

SCALE: 1:500



### Legend

	Gneiss
	Interbedded Mica Schist and Quartz-Schist
	Inferred boundary between moderately weathered and slight weathered
	Inferred lithology boundary
	Joint number and attitude (Dip direction/DIP)

### Joint sets of adit No.3

ID	Occurrence	Remark
1	J15 280°∠60°	
2	J16 40°∠28°	
3	Foliation 290°~340°∠15°~30°	

### Control points

No.	Coordinates(m)		EL.(m)
	N(m)	E(m)	
T1	3108930.680	622312.158	1194.28
T2	3108927.093	622308.124	1194.28
T3	3108926.709	622304.867	1194.28
T4	3108920.051	622305.778	1194.28
T5	3108931.518	622319.961	1194.28
T6	3109203.900	622161.998	1213.36
T7	3109190.949	622166.980	-
T8	3109185.832	622169.326	-

1:500 0 5 10 15 20 25m

REFERENCE DRAWINGS

UT1-C-150-CVL-DC-43002	Surrounding Rock Stability Calculation of Adit No.3
UT1-C-000-CVL-DG-40001	Detailed Design Drawing of Excavation and Support for Underground Cavern
UT1-C-845-CVL-DG-70005	Layout Drawing of Monitoring for Adit No.3
UT1-C-150-CVL-DG-43009	Drawing of construction adit NO.3 plugging

SYMBOL AND LEGEND

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REV. NO.	DATE	DESCRIPTION	DRAWN	CHKD.	APPD.

PROJECT TITLE  
Upper Trishuli-1 HEP (216MW)

OWNER  
**NWEDC**  
NATIONAL WATER AND ENERGY DEVELOPMENT CO., LTD.

OWNER'S ENGINEER  
**TRACTEBEL**  
ENGIE

**jade**  
CONSULT

CONTRACTOR  
**DOOSAN** Doosan Heavy Industries & Construction

DRAWING TITLE  
EXCAVATION AND INITIAL SUPPORT DRAWINGS  
OF ADIT NO.3 (1/5)

INDEX	DRAWING NUMBER	SHET NO.	REV. NO.
A	UT1-C-150-CVL-DG-43004-1	1 OF 5	G

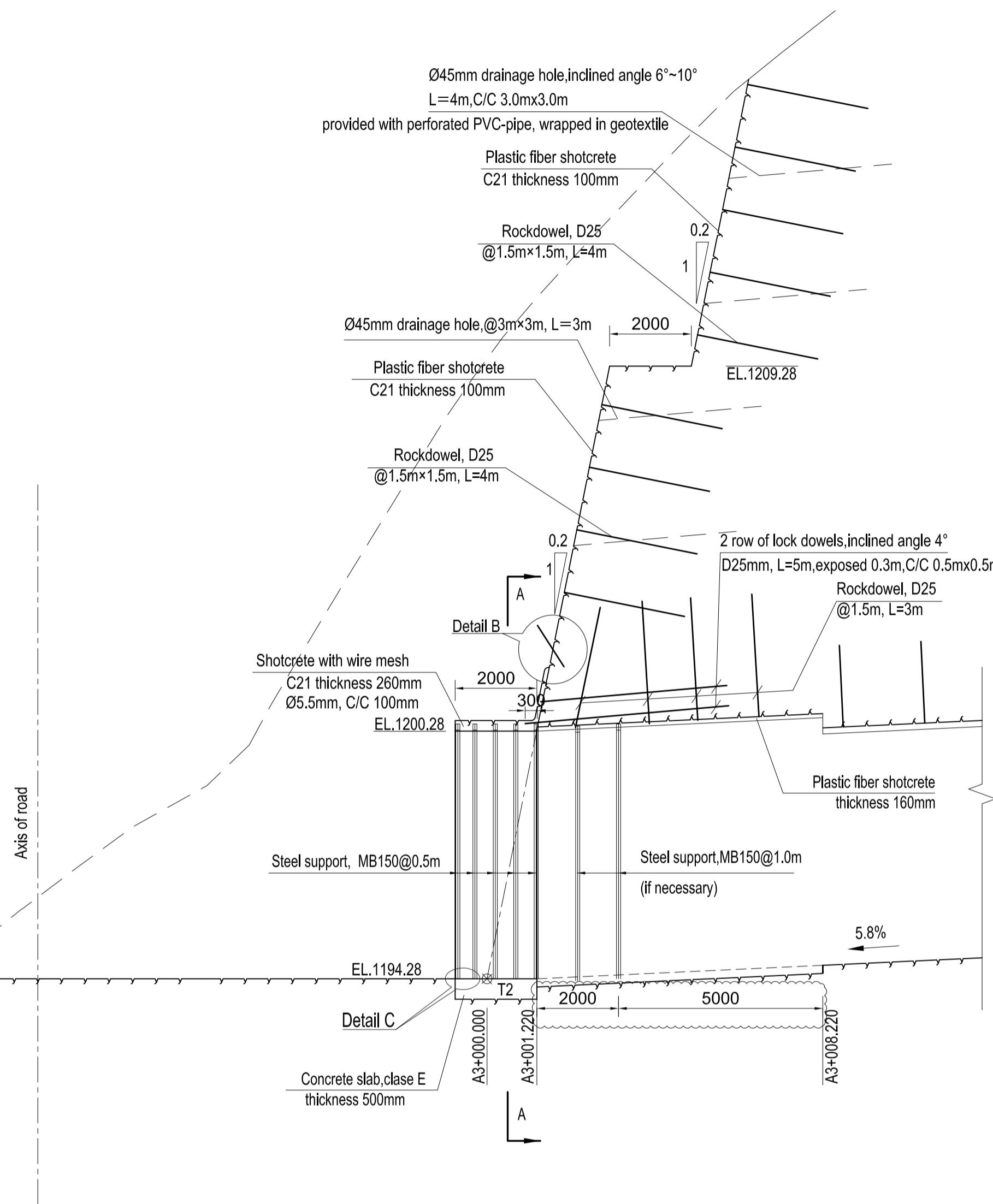
A1 (594 x 841 MM) 1

## NOTE

- This set of drawings are the excavation and initial support of adit No.3.
- The coordinates, chainages & elevations are measured in meters, all dimensions are in millimeters unless otherwise stated.
- Symbol description:  
 A-Line is the design excavation line.  
 B-Line is the overbreak line.  
 R-denotes round bar, yield strength of the round bar is 280MPa.  
 D-denotes deformed bar, yield strength of the deformed bar is 500 MPa;
- Strength specification of concrete & shotcrete:  
 (1) Concrete class E: Cylinder specified compressive strength 24MPa at 28 days.  
 (2) Shotcrete: Cylinder specified compressive strength 25MPa at 28 days unless the slope of the portal and 1 day aged shotcrete shall have strength above 10MPa as per contract.
- Other notes see sheet 1.

## Detail A

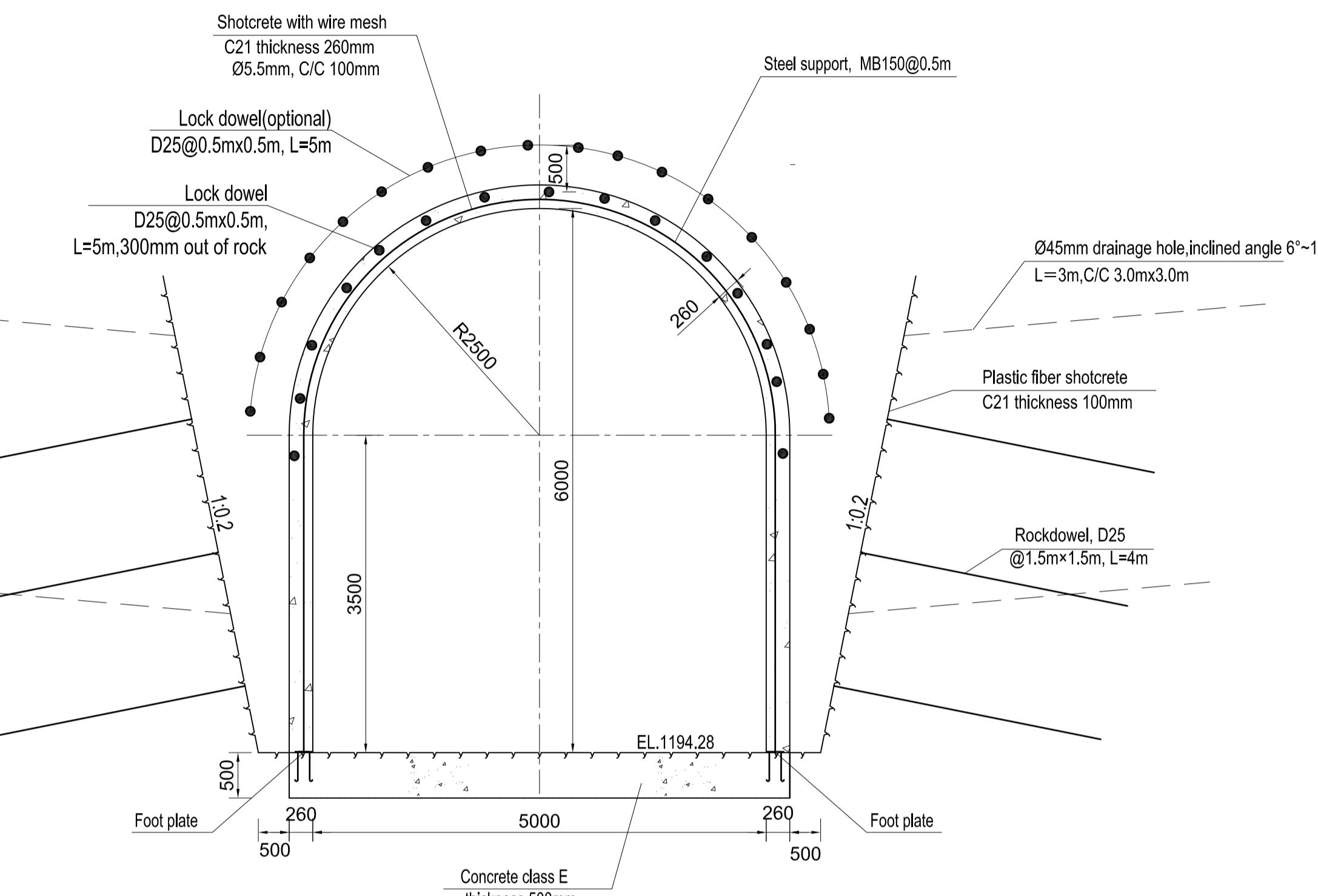
SCALE: 1:100



## SCHEMATIC DIAGRAM OF OPEN TUNNEL

(SECTION A-A)

SCALE 1:50



## REFERENCE DRAWINGS

UT1-C-150-CVL-DC-43002	Surrounding Rock Stability Calculation of Adit No.3
UT1-C-000-CVL-DG-40001	Detailed Design Drawing of Excavation and Support for Underground Cavern
UT1-C-845-CVL-DG-70005	Layout Drawing of Monitoring for Adit No.3
UT1-C-150-CVL-DG-43009	Drawing of construction adit NO.3 plugging

## SYMBOL AND LEGEND

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PROJECT TITLE  
Upper Trishuli-1 HEP (216MW)

OWNER'S ENGINEER

CONTRACTOR

DOOSAN Doosan Heavy Industries &amp; Construction

DRAWING TITLE  
EXCAVATION AND INITIAL SUPPORT DRAWINGS  
OF ADIT NO.3 (2/5)

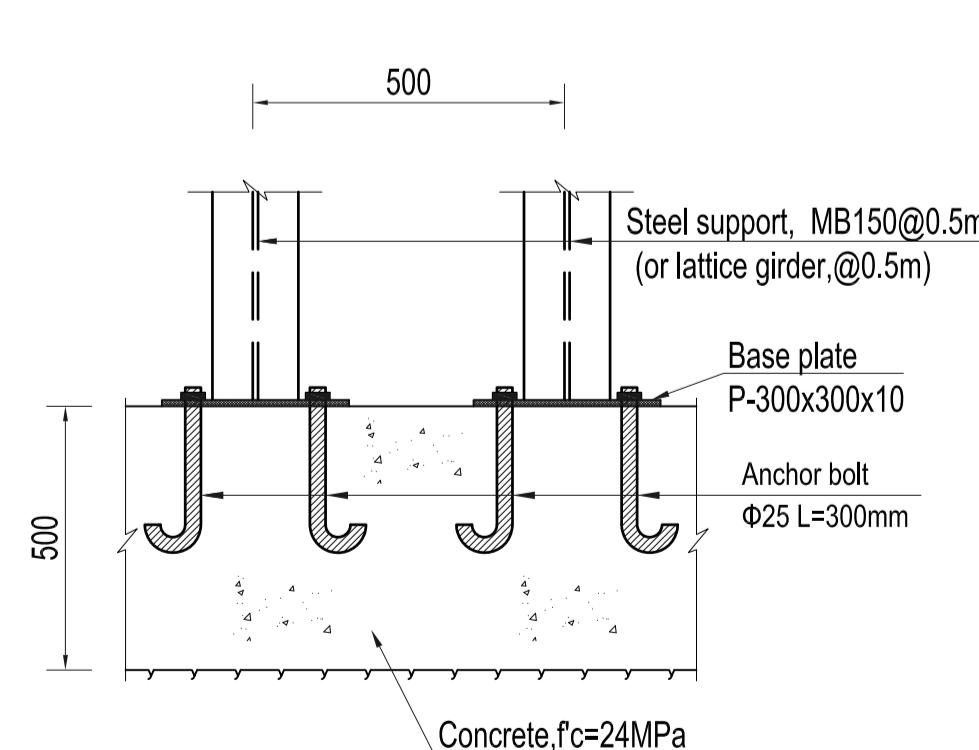
INDEX DRAWING NUMBER SHEET NO. REV. NO.

A UT1-C-150-CVL-DG-43004-2 2 OF 5 G

A1 (594 x 841 MM) 1

## DETAIL C

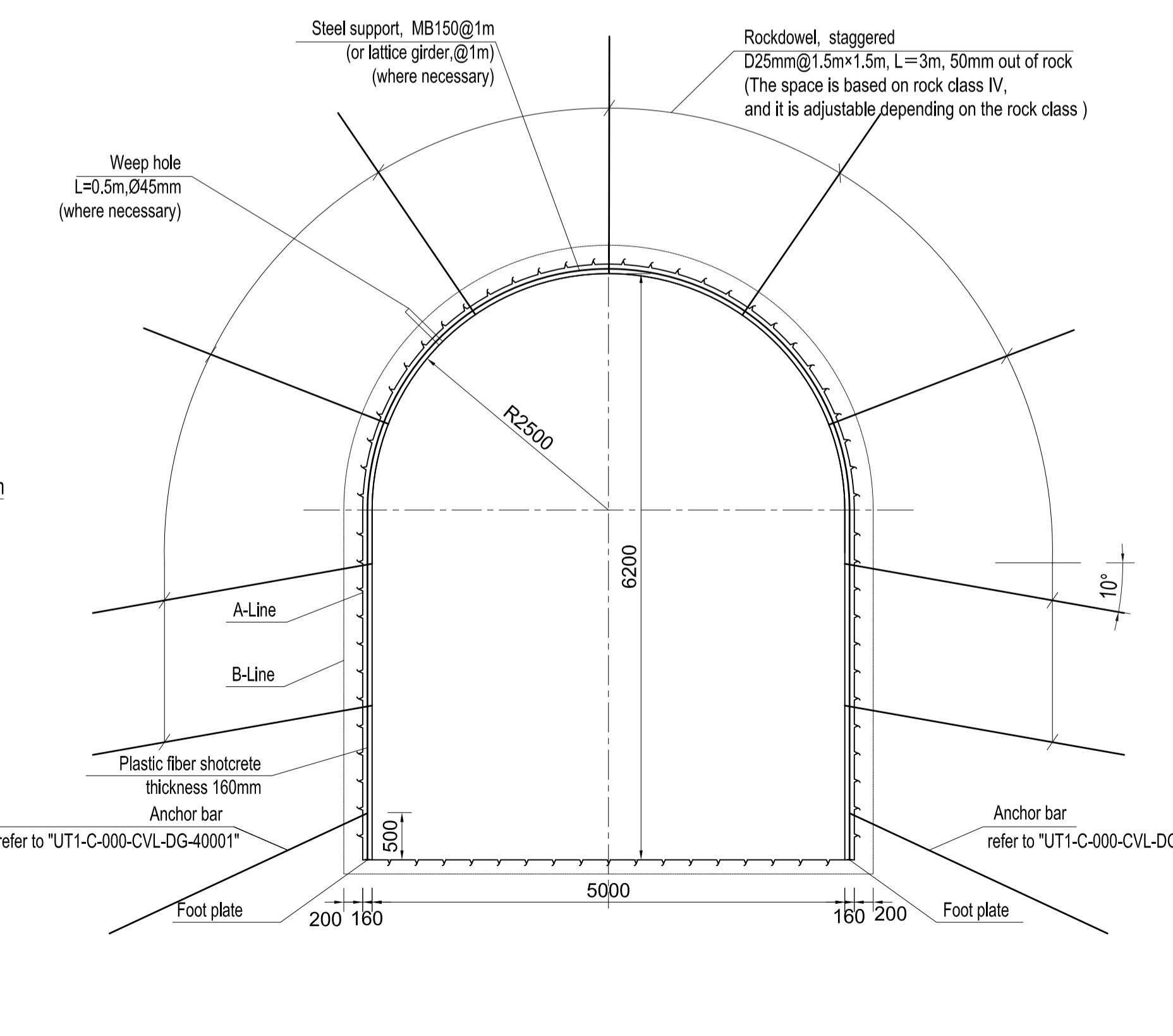
SCALE: 1:50



## SUPPORT TYPE OF TUNNEL ENTRANCE SECTION

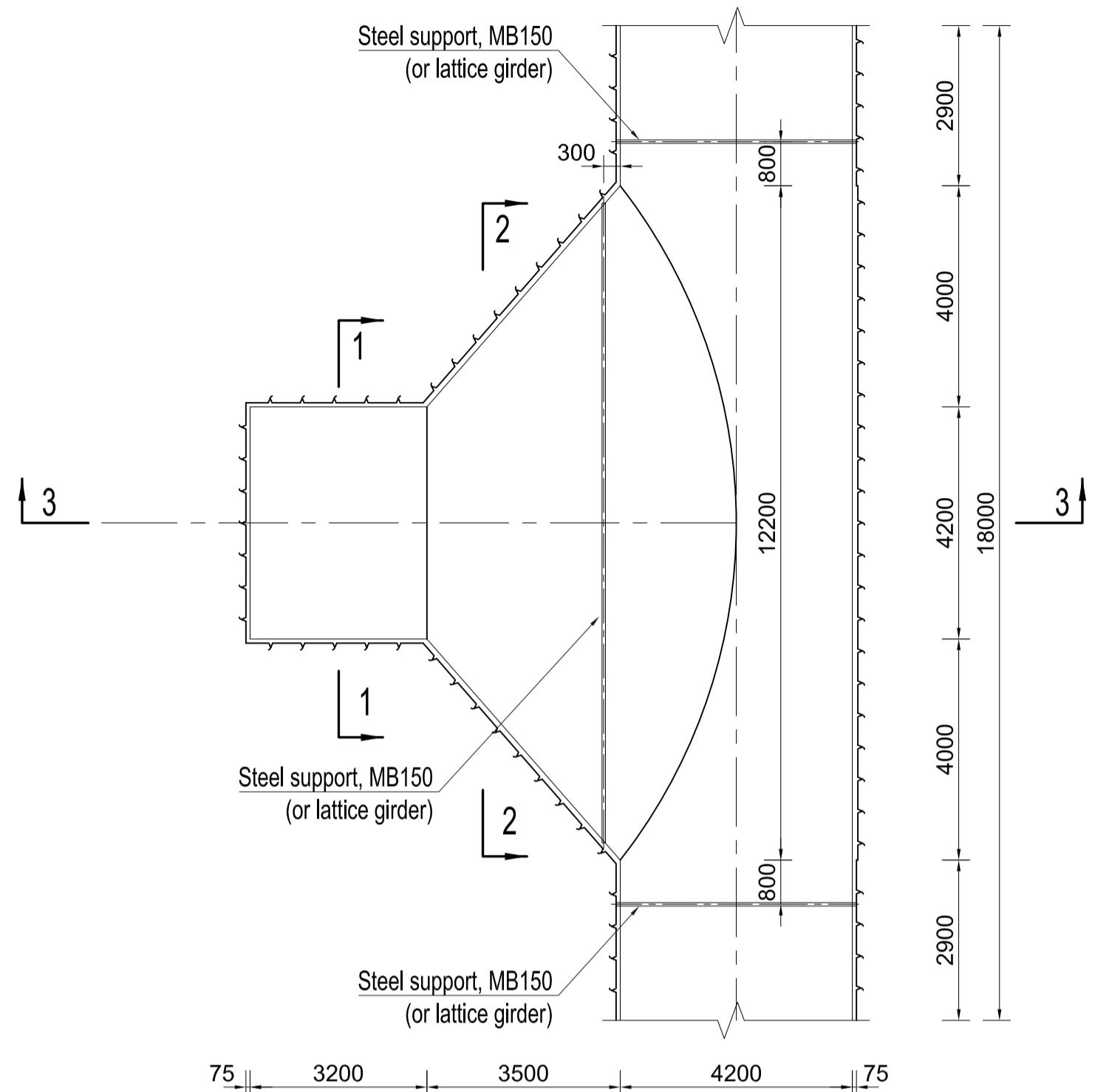
(A3+001.220~A3+008.220)

SCALE 1:50



# PLAN OF TURNING ADIT (ROCK CLASS III)

SCALE 1:100



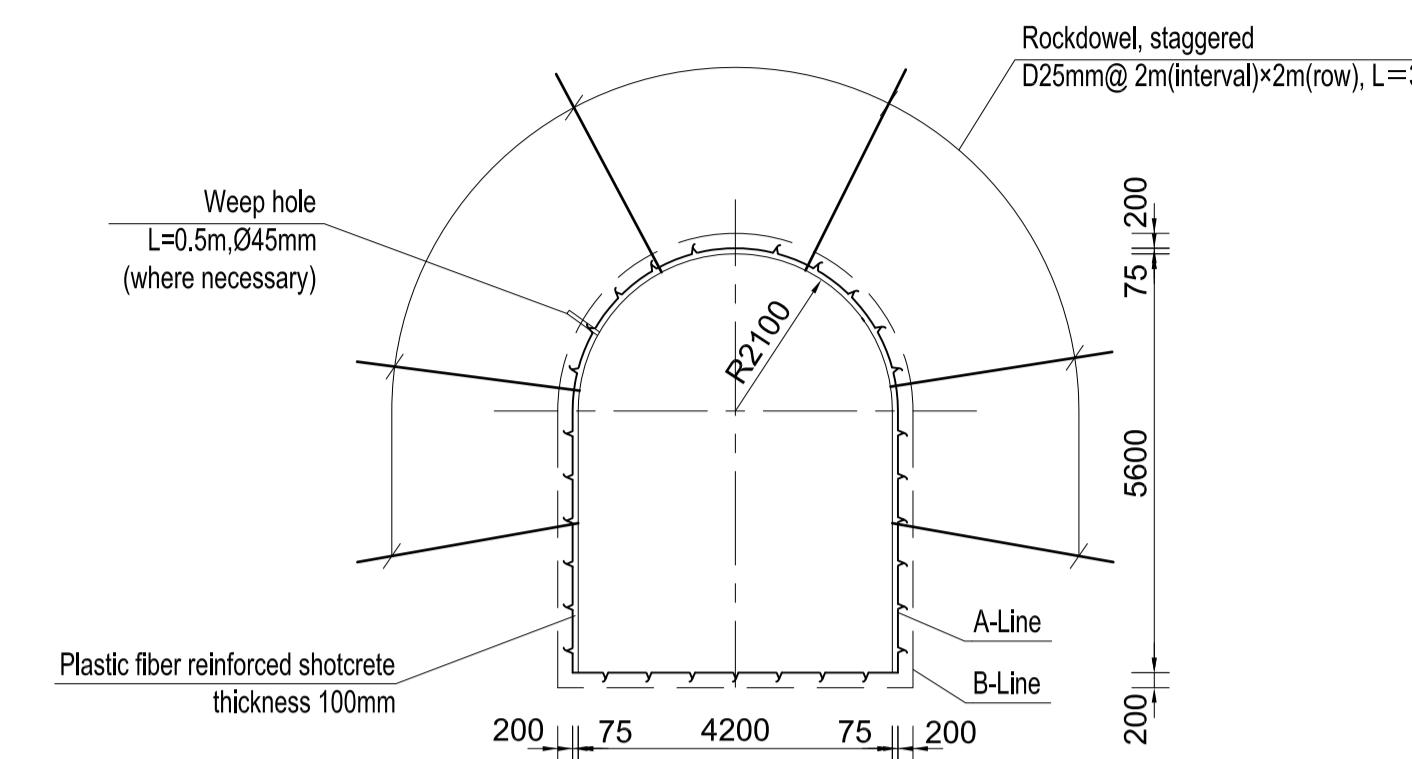
Note: the steel ribs at the start and end of the turning bay are only required in Class III, IV.

## SECTION 1-1

SCALE 1:100

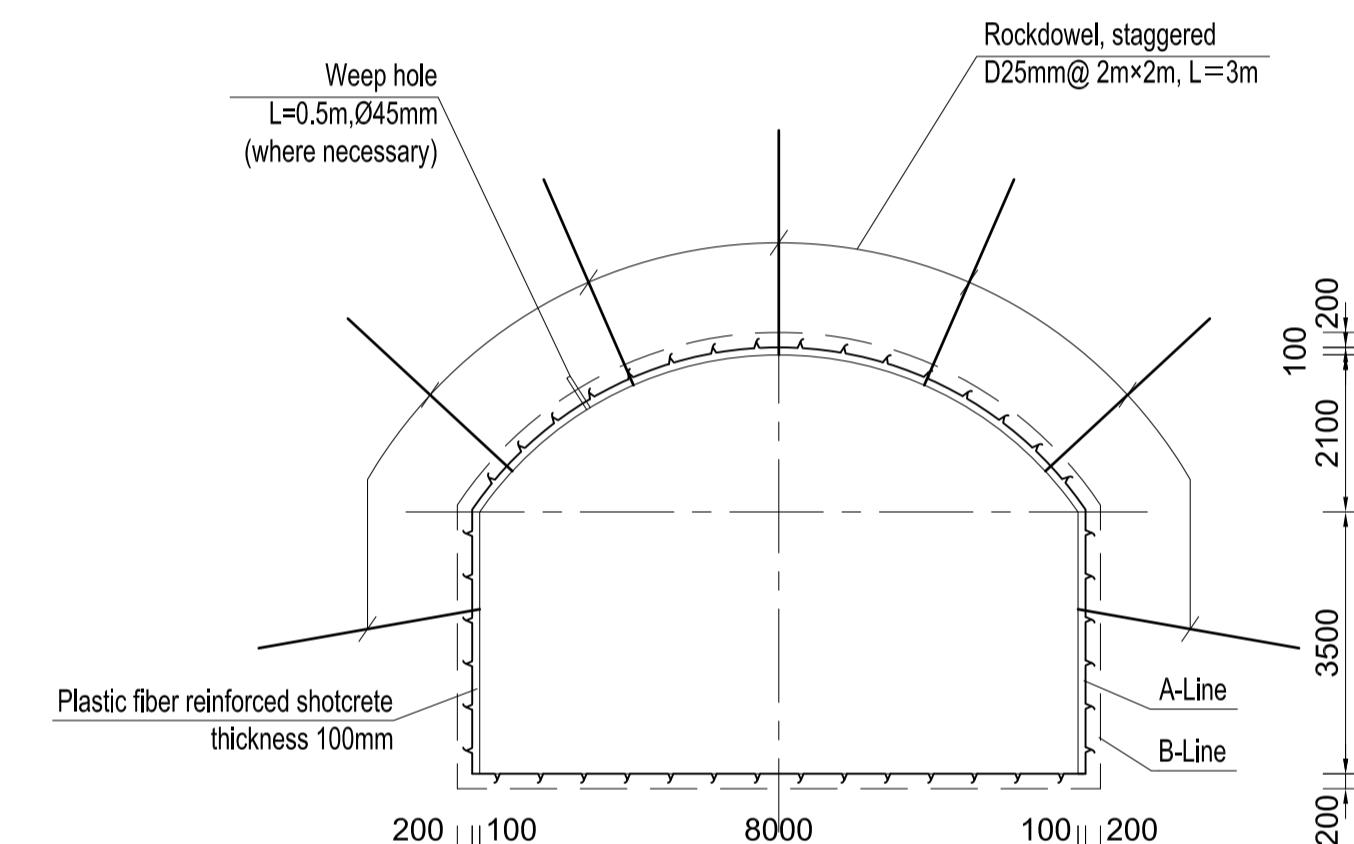
## SECTION 1-1

SCALE 1:100



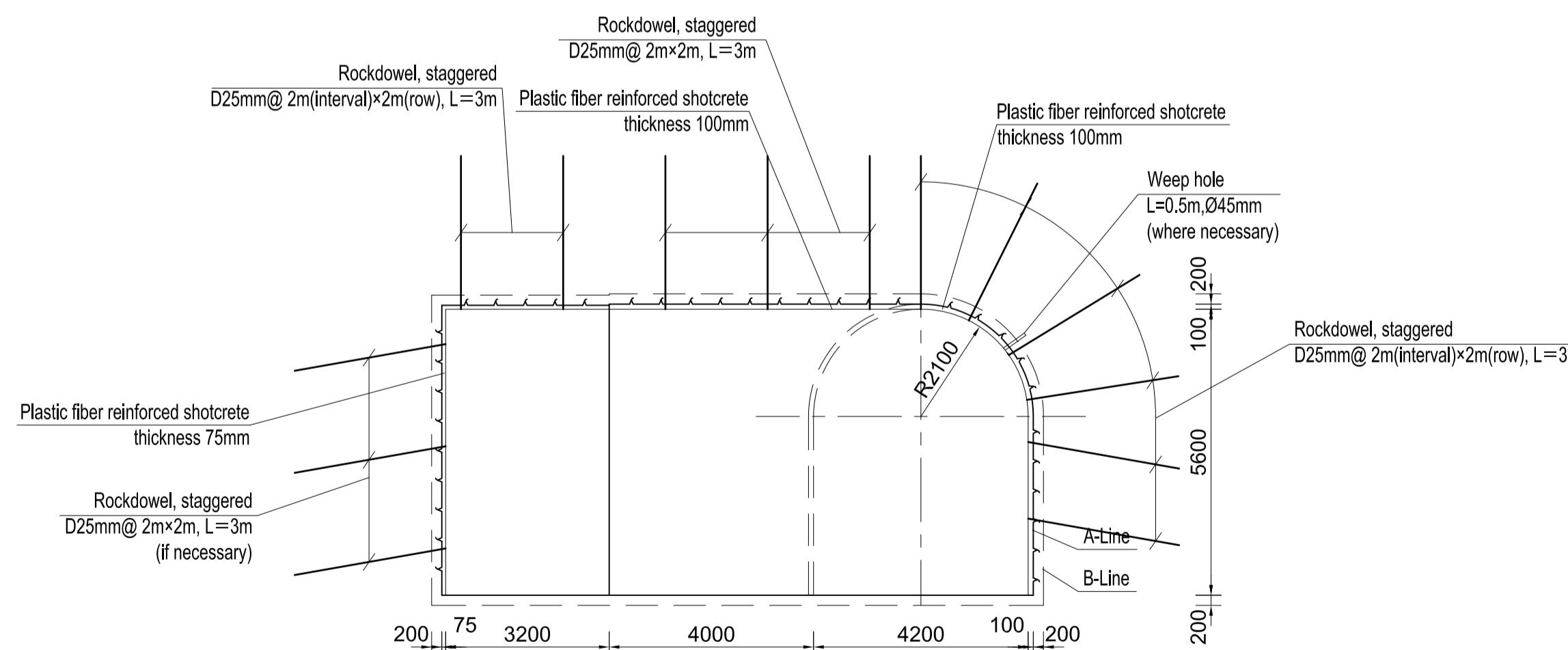
## SECTION 2-2

SCALE 1:100



## SECTION 3-3

SCALE 1:100



## TUNNEL SUPPORT PATTERN

Support pattern	Class I	Class II	Class III	Class IV	Class V
Rock mass quality	Q>40	10<Q<40	4<Q<10	1<Q<4	Q<1
Rock dowel	Spot bolting D25, L=3m (where necessary)	Pattern bolting D25@2.5, L=3m (in tunnel roof)	Pattern bolting D25@2.0, L=3m (alternative)	Pattern bolting D25@1.5, L=3m (alternative)	Pattern bolting D25@1.0, L=3m (alternative)
Shotcrete	--	T=50mm(PFRS)	T=75mm(PFRS)	T=120mm(PFRS)	T=160mm(PFRS)
Steel support	--	--	--	MB150@1.0m or (lattice girder@1m) (where necessary)	MB150@1.0m or (lattice girder@1.0m)
Supplementary support	--	--	--	Forepoling grouted dowel, D25@0.4m, L=6m (where necessary)	Forepoling grouted dowel, D25@0.4m, L=6m
Unsupported span for shotcrete(m)	--	9	2	1.5	0.5-1.0
Unsupported span for rock dowel(m)	--	6	4	3	0.5-1.0
Unsupported span for steel support(m)	--	--	--	0.5-1.0	0.5-1.0
Excavation span(m)	3	3	2	1.0-1.5	0.5-1.0
Excavation method	Blasting/Mechanically			Mechanically	

1:100 0 1 2 3 4 5m

## NOTE

- This set of drawings are the excavation and initial support of adit No.3.
- The coordinates, chainages & elevations are measured in meters, all dimensions are in millimeters unless otherwise stated.
- Other notes see sheet 1 & sheet 2.

## REFERENCE DRAWINGS

UT1-C-150-CVL-DC-43002	Surrounding Rock Stability Calculation of Adit No.3
UT1-C-000-CVL-DG-40001	Detailed Design Drawing of Excavation and Support for Underground Cavern
UT1-C-845-CVL-DG-70005	Layout Drawing of Monitoring for Adit No.3
UT1-C-150-CVL-DG-43009	Drawing of construction adit NO.3 plugging

## SYMBOL AND LEGEND

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PROJECT TITLE  
Upper Trishuli-1 HEP (216MW)



OWNER'S ENGINEER  
TRACTEBEL ENGIE



CONTRACTOR  
DOOSAN Doosan Heavy Industries & Construction

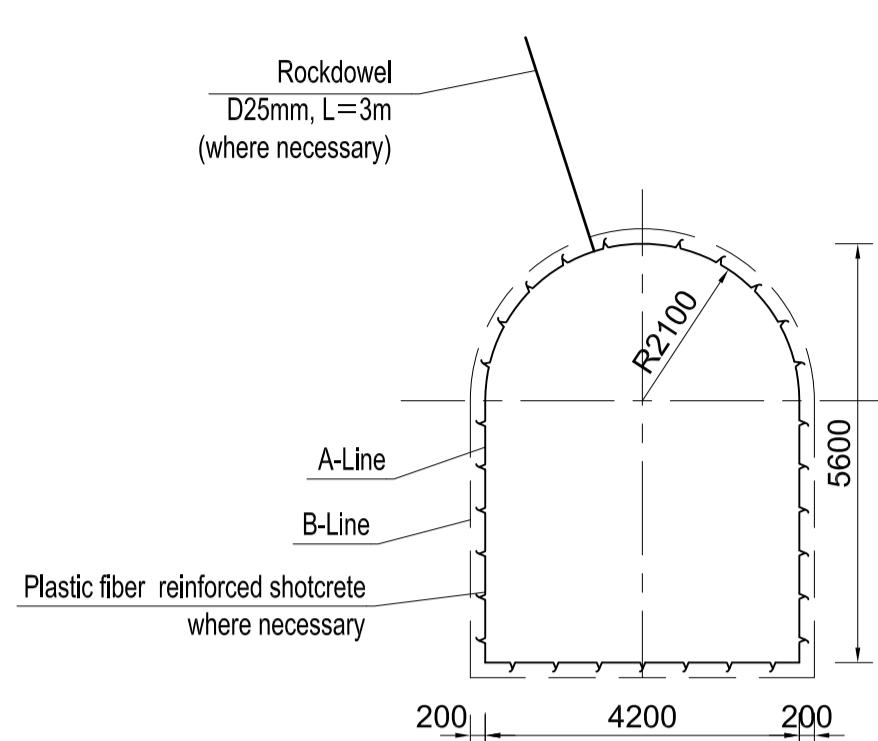
DRAWING TITLE  
EXCAVATION AND INITIAL SUPPORT DRAWINGS  
OF ADIT NO.3 (3/5)

INDEX	DRAWING NUMBER	SHEET NO.	REV. NO.
A	UT1-C-150-CVL-DG-43004-2	3 OF 5	G

A1 (594 x 841 MM) 1

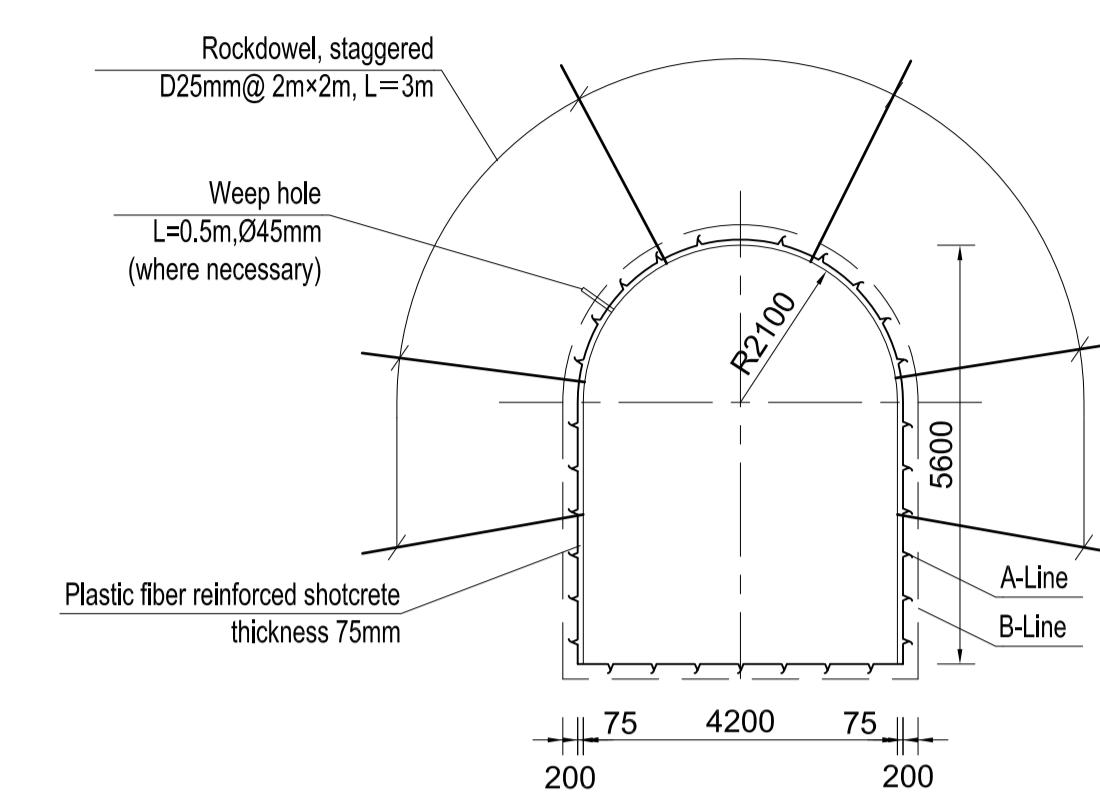
## SUPPORT TYPE OF ROCK CLASS I

SCALE 1:100



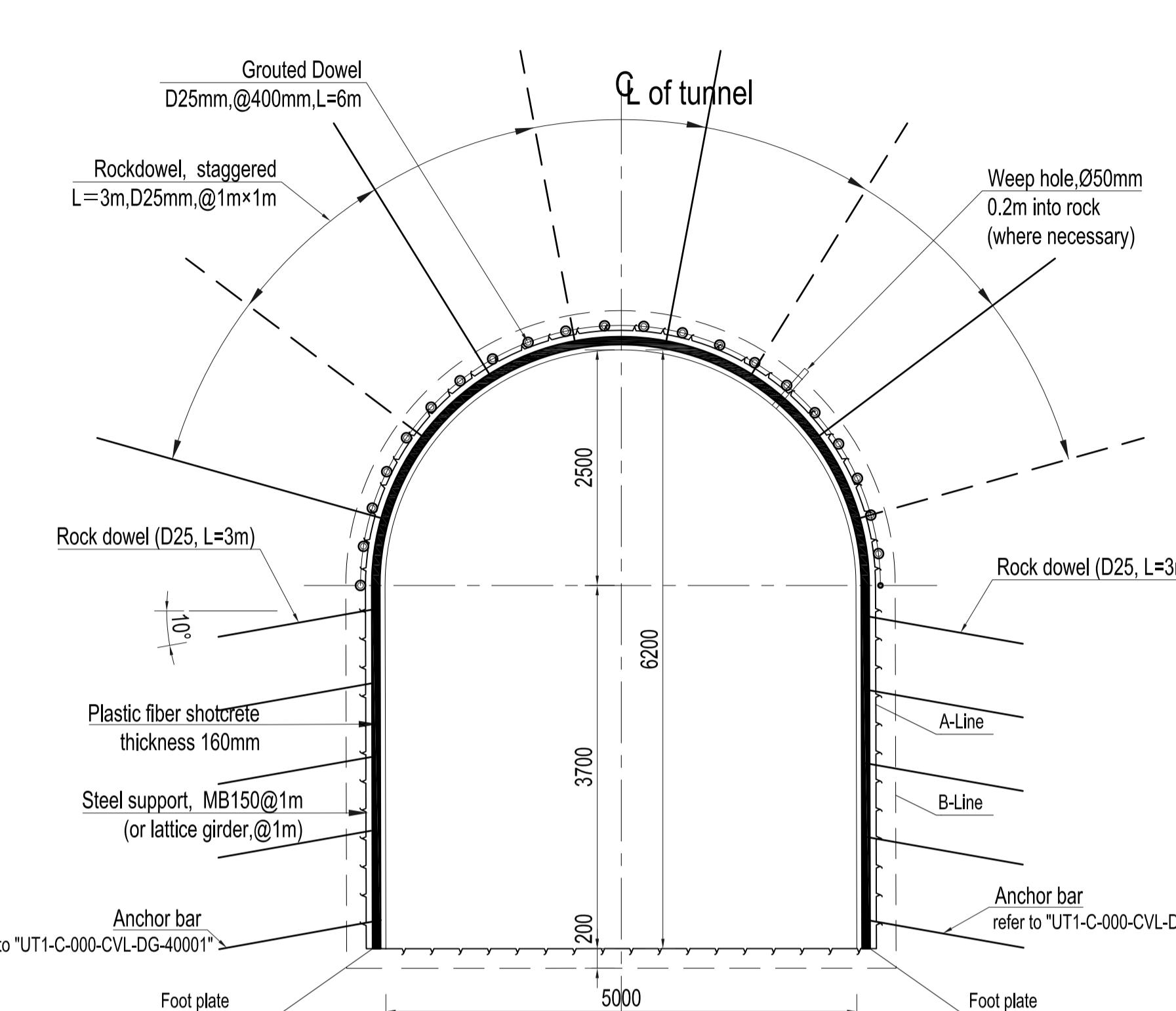
## SUPPORT TYPE OF ROCK CLASS III

SCALE 1:100



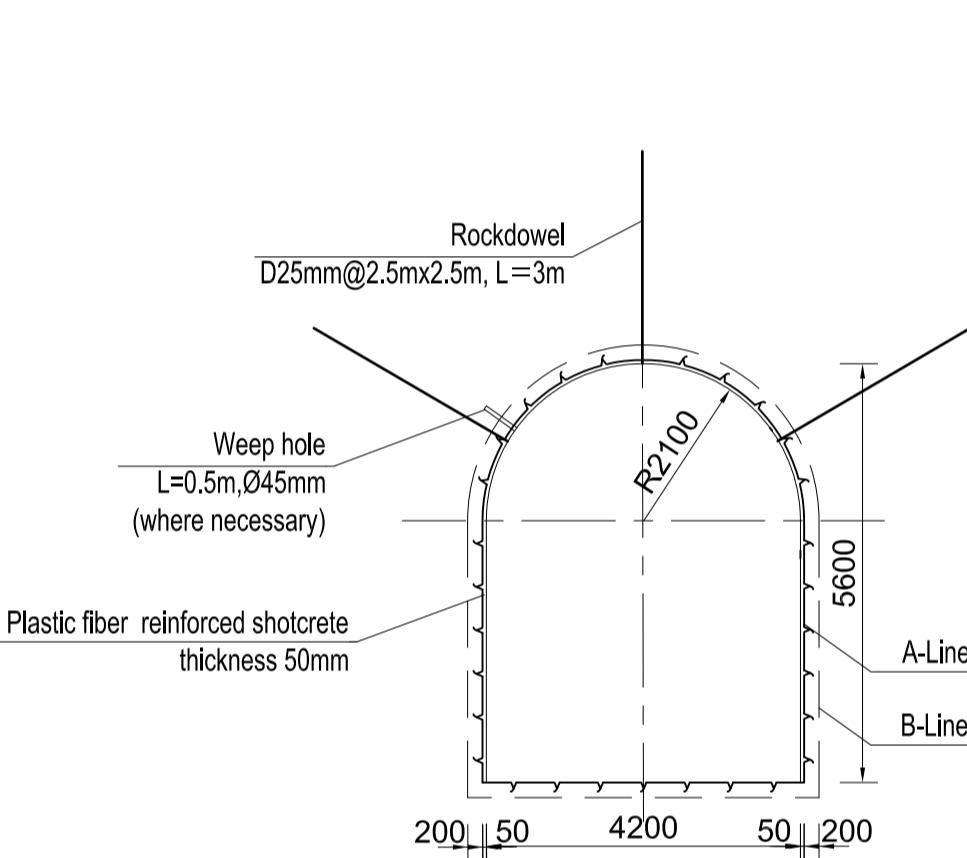
## ACROSS SECTION OF FOREPOLING

SCALE 1:100



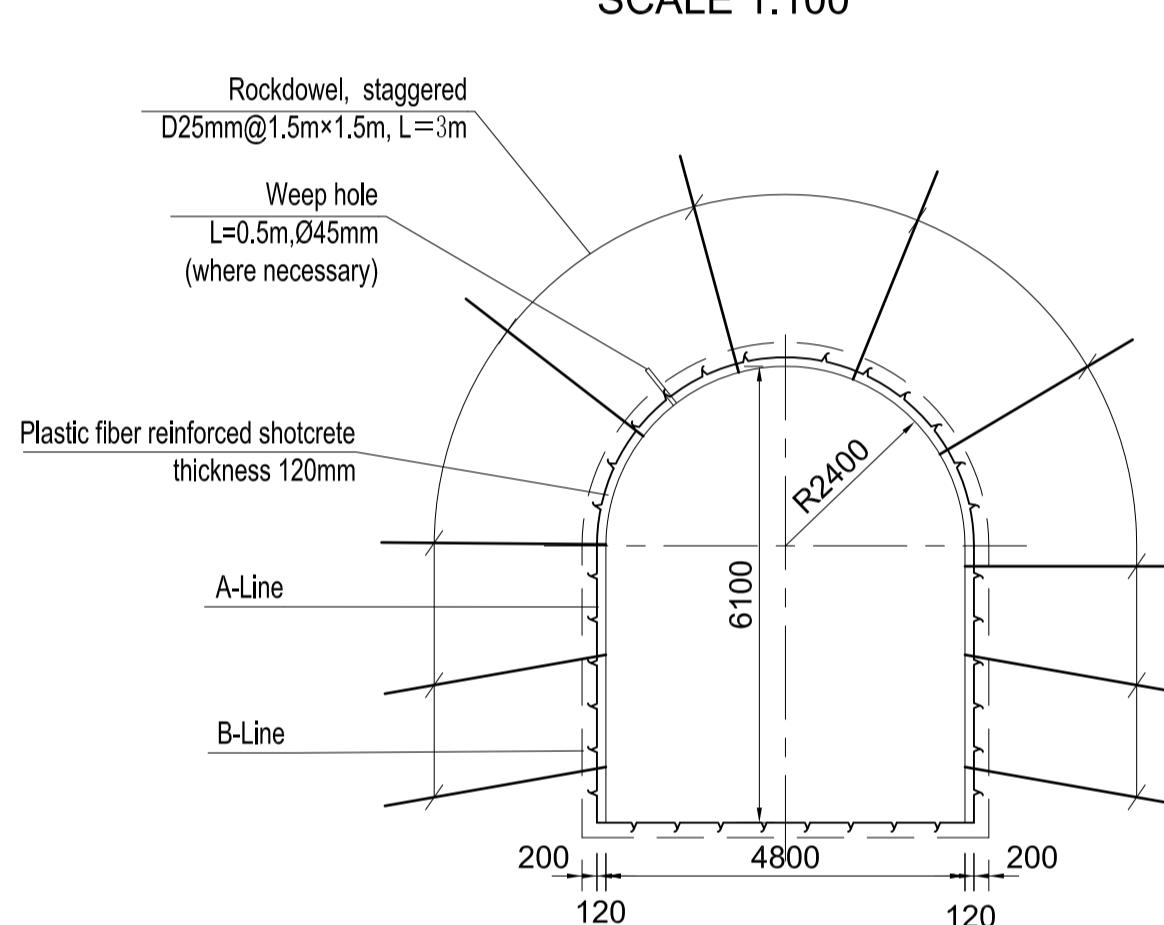
## SUPPORT TYPE OF ROCK CLASS II

SCALE 1:100



## SUPPORT TYPE OF ROCK CLASS IV

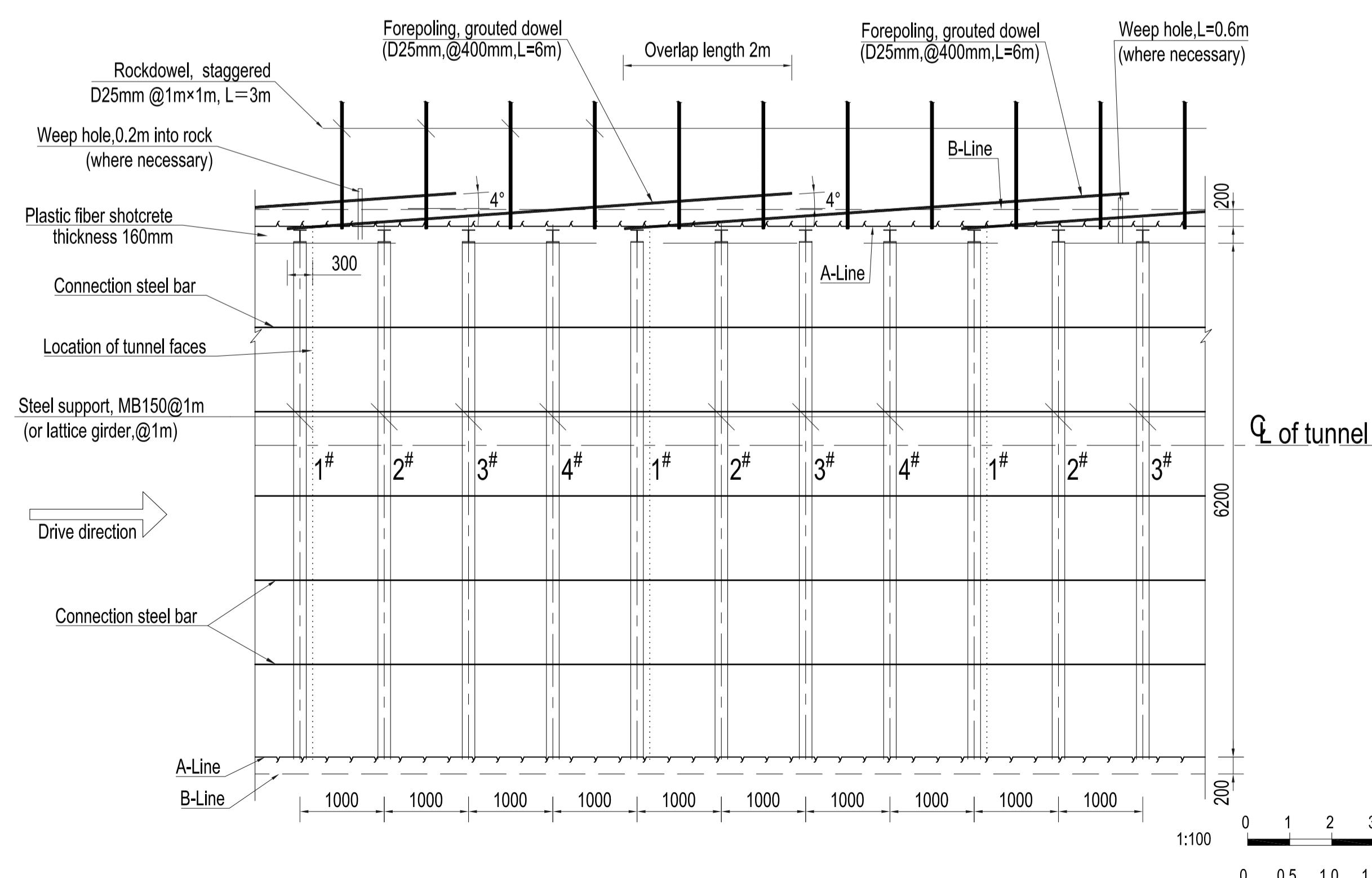
SCALE 1:100



## LONGITUDINAL PROFILE OF FOREPOLING

SCALE 1:50

Applied to class V



## NOTE

- This set of drawings are the excavation and initial support of adit No.3.
- The coordinates, chainages & elevations are measured in meters, all dimensions are in millimeters unless otherwise stated.
- The canopy forepoling is mainly used in the tunnel section with poor surrounding rock geology, which should be used together with dowel and steel support (or lattice girder), and the spacing of dowel should be consistent with that of steel support.
- The steel support (or lattice girder) to rock class IV is subjected to the exposed geological condition.
- The excavation profile may need to be adjusted to a "saw-tooth profile" and size of ribs/girders may also be adjusted.
- Other notes see sheet 1 & sheet 2.

## REFERENCE DRAWINGS

UT1-C-150-CVL-DC-43002	Surrounding Rock Stability Calculation of Adit No.3
UT1-C-000-CVL-DG-40001	Detailed Design Drawing of Excavation and Support for Underground Cavern
UT1-C-845-CVL-DG-70005	Layout Drawing of Monitoring for Adit No.3
UT1-C-150-CVL-DG-43009	Drawing of construction adit NO.3 plugging

## SYMBOL AND LEGEND

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PROJECT TITLE  
Upper Trishuli-1 HEP (216MW)



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TRACTEBEL ENGIe JADE CONSULT

CONTRACTOR  
DOOSAN Doosan Heavy Industries & Construction

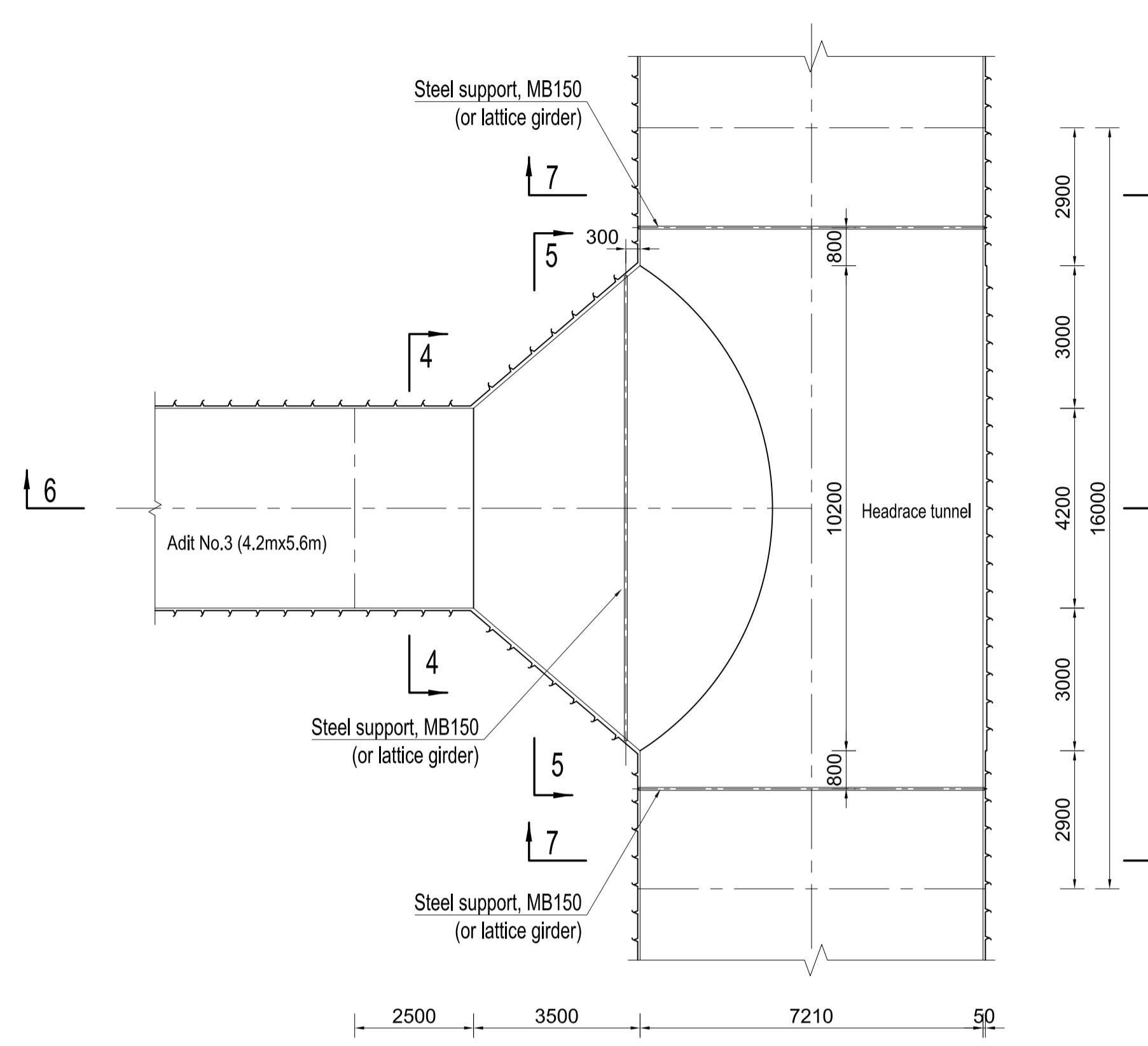
DRAWING TITLE  
EXCAVATION AND INITIAL SUPPORT DRAWINGS  
OF ADIT NO.3 (4/5)

INDEX	DRAWING NUMBER	SHEET NO.	REV. NO.
A	UT1-C-150-CVL-DG-43004-4	4 OF 5	G

A1 (594 x 841 MM) 1

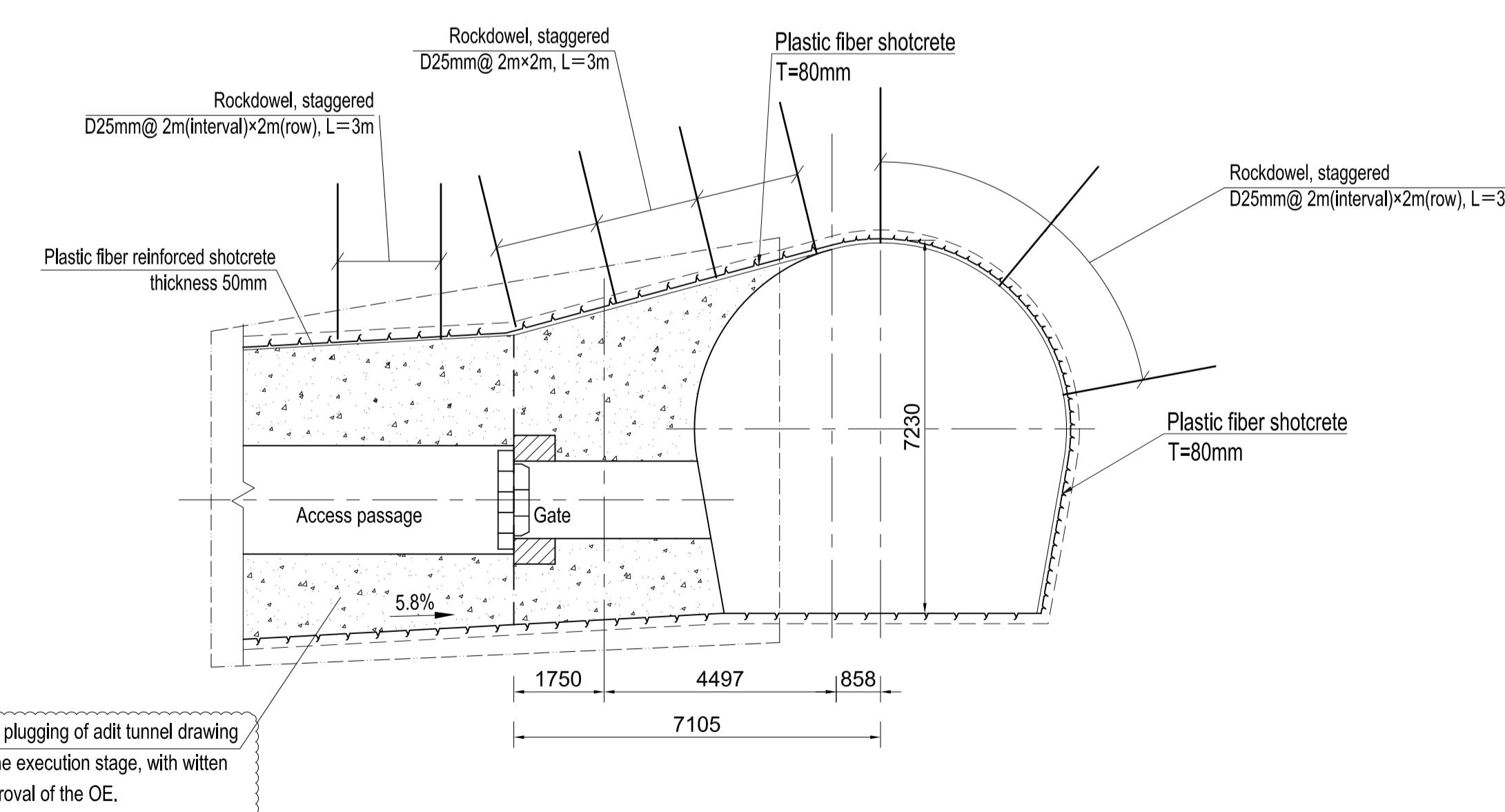
## PLAN OF BRANCH OF ADIT NO.3& HEADRACE TUNNEL

SCALE 1:100



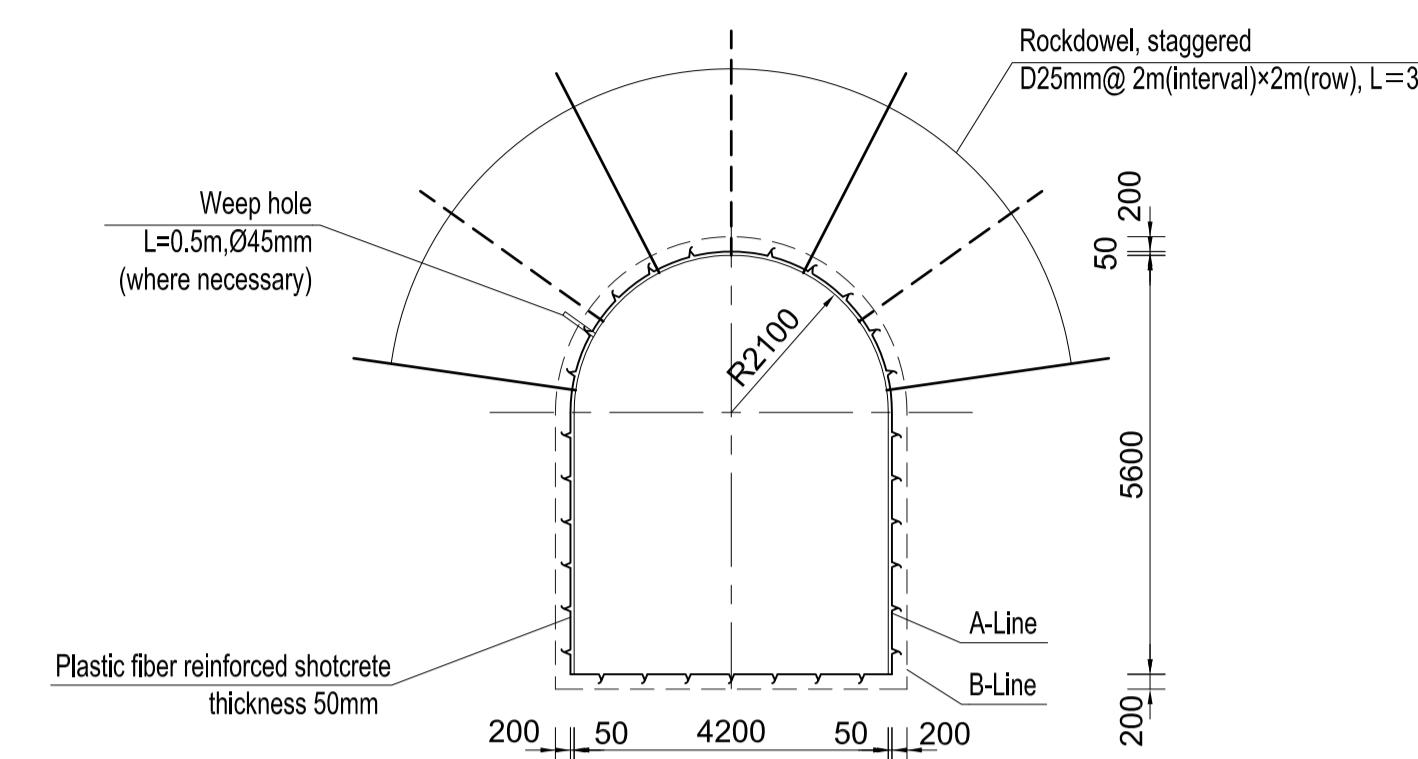
## SECTION 6-6

SCALE 1:100



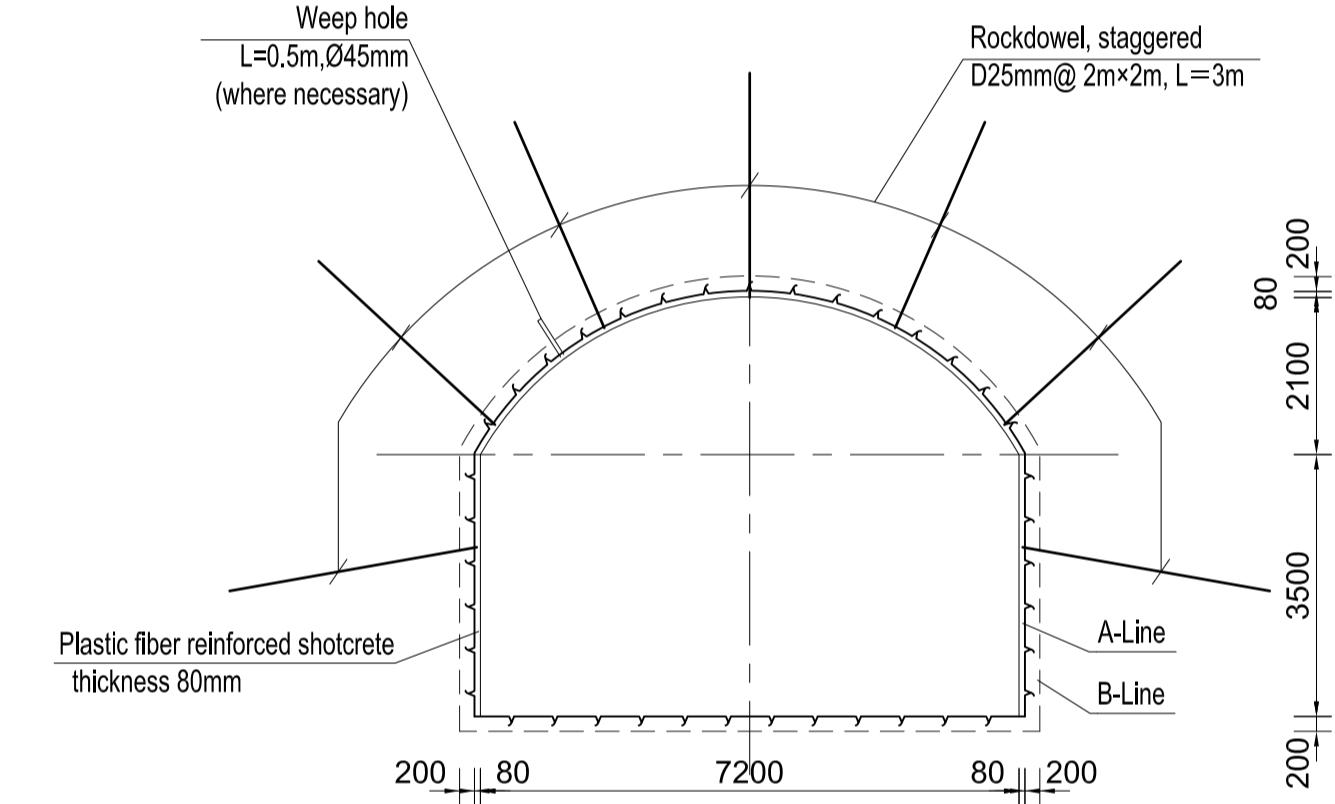
## SECTION 4-4

SCALE 1:100



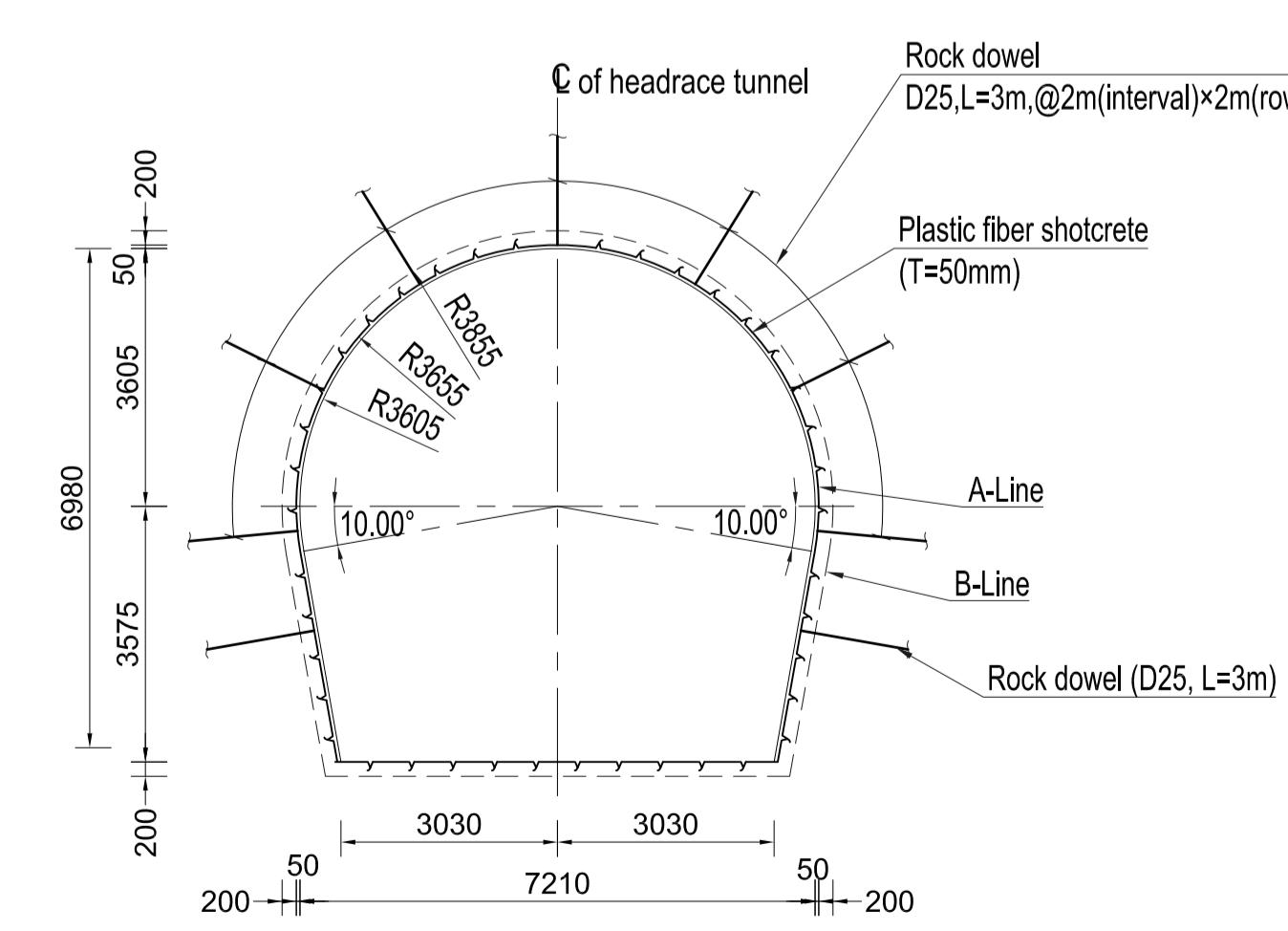
## SECTION 5-5

SCALE 1:100



## SECTION 7-7

SCALE 1:100



1:100 0 1 2 3 4 5m

## NOTE

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- Other notes see sheet 1 & sheet 2.

## REFERENCE DRAWINGS

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PROJECT TITLE  
Upper Trishuli-1 HEP (216MW)



OWNER

OWNER'S ENGINEER



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DOOSAN Doosan Heavy Industries & Construction

DRAWING TITLE  
EXCAVATION AND INITIAL SUPPORT DRAWINGS  
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